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ABSTRACT

Vocational education programs/facilities in Alabama's 67 counties were examined to determine the degree of Vocational Education Act (VEA) success in achieving equitable distribution of vocational education facilities and programs and to explore the implications of ignoring the usual community structural prerequisites to locating an Area Vocational Training Center (AVTC). The hypothesis posited was: school demography indicators of need rather than local macro-community indicators of wealth and values will predict the location of AVTC's as provided for by VEA. Data were coded for: 1970; 1974; 1975; 1976; and 1978 (a code of 1 represented 1 or more AVTC, while 0 represented no AVTC in the county). The variables employed were: school enrollment; percent disadvantaged; establishments (20+ employees); percent school enrollment non-white; population growth rate (1960-70); and population growth rate (1970-76). Results indicated that: since 1970 there has been a tendency to locate AVTC in smaller communities with increasingly smaller enrollments; school enrollment was the strongest predictor variable throughout the study period; local values in the form of the percent non-white school enrollment exerted a strong influence on AVTC location in 1970 and increasingly strong influences in 1974-76; the hypothesis that AVTC's are located with respect to the proportion of youth who are disadvantaged was weakly supported only after controlling for the proportion of black enrollment. (JC)

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Countering Macro-structure in the Location of Area Vocational Training Centers: Implications for Emerging Rural Communities.*

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"If there is to be educational opportunity for all children, then a child's education must not depend on his family's economic resources. But if a family is to be able to provide its children with the best education it can afford, then it must be able to employ its economic resources to do so. These two requirements are in direct opposition."

James S. Coleman
Coons et al, 1970: vii

In the United States, compared with most countries, neither the private versus public school tug-of-war, nor a dual public school system which terminates early for the masses differentiates the quality of primary and secondary education on a broad scale. Nevertheless, wide-reaching differentiation has come about. Coleman, Coons, and others attribute this primarily to our system of local financing (Coons, 1970). Coincidentally, local residential patterns in the U.S. have become much more homogeneous, largely due to the automobile, a highly efficient highway system, and FHA wholesale financing of one new residential community after another. In this way, whole communities of relatively well-to-do families have achieved greater leverage for their education tax dollar. Meanwhile, the poorer school districts are left behind with a depreciated school facility. If quality is to be maintained, whether the location is in the remote rural areas or the central cities, the declining tax base must bear a much greater tax burden. Clearly, this is not likely to happen.

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While it may be that the better endowed local communities were achieving education excellence for their children, Congress, in 1963 and more forcefully in 1968, was giving "fundamental and philosophical attention to vocational education for the first time since 1917." Rather than emphasizing the needs of the labor market as in 1917, the Vocational Education Act of 1963 and the Vocational Education Amendments of 1968 (VEA) exhibited a growing sensitivity to "people who needed skills" (Essex, 1968: 1).

The declaration of purpose of the act (VEA, 1968) is to allow that "persons of all ages in all communities of the state will have ready access to vocational training or retraining which is of high quality---". With this unmistakably implied emphasis upon equality, reinforced by repeated references to the disadvantaged (academically, socioeconomic, or otherwise), it would appear that this federal act, in part, was designed to redress the acknowledged inequities which have resulted from local financing of education.

In short, one purpose of this paper is to make an assessment of VEA success in achieving equitable distribution of vocational education facilities and programs. In this study, it is assumed that equality in vocational education, more so than in general education, requires equality of facilities.

As a monitoring tool, to aid in the assessment of equitable distribution of vocational education facilities, the following hypothesis is posited:

> School demography indicators of need rather than local macro-community indicators of wealth and values will predict the location of area vocational training centers (AVTC) as provided for by VEA.

This hypothesis is meant to pit indicators of the conventional allocative criteria of state boards of education against those of the prevailing system of local determination.

The second purpose of the paper is to explore the implications of ignoring the usual community structural prerequisities to locating an AVTC.

Unit of Study and the Dependent Variable

This study is confined to the 67 counties of Alabama. However, the specific variables and data used are standard and are generally relevant and available for all Southeastern states. As is implicit in the design of this study, replication in other states is anticipated.

In concept, an area vocational school would serve more than one school district, would respond more rapidly to the demands of the labor market, and would experiment more aggressively with new programs. The Vocational Education Act of 1963 increased funds for construction of area vocational schools to include training for any non-professional occupation. While the influence of the construction program on the

quality of vocational education is difficult to assess, it is agreed that "improvement of facilities through remodeling and renovation and updating and upgrading of equipment used for instruction" is accomplished (Essex, 1968:36).

The term Area Vocational Training Center (AVTC), as used here, is adapted from the Vocational Education Amendments of 1968 (VEA) as it applies in Alabama. AVTC refers to either "(A) a specialized high school used exclusively or principally for the provision of vocational education to persons who are available for study in preparation for entering the labor market, or (B) the department of a high school exclusively or principally used for providing vocational education in no less than five different occupational fields to persons who are available for study in preparation for entering the labor market--" as long as it is available to all high school students in the area (county or city school district) designated by the State Board (VEA, 1968: Sec. 108:2).

Coding of the location by county of the AVTC for analysis is either 1 (one or more AVTC) or 0 (no AVTC). Even though some of the more densely populated Alabama counties contain two or more AVTC, due to the statistical analysis proposed here they are necessarily coded 1. A code of 1 represents access to AVTC by all high school students of the county. To allow monitoring of any trends in location of AVTC with respect to indicators of need and community structure, these data are coded for five separate years (1970, 1974, 1975, 1976 and 1978) of the current dynamic expansionary phase.

Independent variables: State allocative criteria and local macro-structure

Insofar as demographic indicators are used in the allocation of school funds, they are usually used with the intent of a more just allocation. The conventional demographic variable is, of course, school enrollment. The specific indicator employed by the Alabama State Board of Education is the total enrollment in all twelve grades of public school. Second, with respect to vocational education, the proportion of the enrollment which is disadvantaged is an important indicator. In other words, the formula for allocating state and federal funds for vocational education is to be weighted in favor of school districts with concentrations of disadvantaged school-age children.

If these two criteria, enrollment and percent disadvantaged, determined allocation of vocational education facility expenditures, the objectives of equality and, perhaps, even compensation for past inadequacies would be well served. The allocative procedure would conform to a linear combination of the number of youth and the proportion of disadvantaged youth with some prescribed weight assigned to the two variables. In other words, if funding were centralized, an equitable allocation of vocational education funds would be quite simple. However, other factors weigh heavily on the outcome. Most of these relate closely to local community structure, growth trends

and values placed on vocational education per se. First, among local macro-structural variables, local institutional structure, industry, and business determine both the demand for vocational education and the tax base available to support it.

More generally, what is sought here is an index of a county's structural complexity. As has been shown in numerous studies, e.g., Young and Young, (1973), a seemingly wide variety of measures may be used to index the complexity dimension. Here, for simplicity, a single index of complexity has been chosen at the outset. It is the number of employers, according to a preliminary report of the 1972 Census of County Business Patterns, that engages 20 or more employees.

Perhaps the most important factor in determining the acceptability of a vocational education stream in the high school curriculum is the local community values system.

Community values with respect to vocational education may vary widely, particularly in the South. Historically, students in rural areas were probably the greatest benefactors of the first Congressional support of vocational education, the Smith-Hughes Act of 1917. However, history is quite clear on the point that blacks have not been inclined to accept an industrial education in lieu of an equal general education. Henry Allen Bullock (1967) observes that by 1933-34, as a collective result of the initiative of several private funds, including the Slater Fund, the Jeanes Fund, and the Rosenwald Fund, dating since 1908, "there was hardly a Southern Negro Community in which a county-training school was not operating (1967: 158)." Thus, the area vocational training school concept is "old hat" to the black community. However, "---Negro education, instead of being specialized along industrial lines, became somewhat of a duplication of the education which was offered to white children. It was separate; it was judged in terms of the value scale held for Negroes; and it symbolized America's dual standard of academic competency" (Bullock, 1967: 466).

The same revolutionary spirit may well be influencing implementation of VEA today. For example, Sally Barber Spitzer of the National Urban League's Education Policy Information Center, writes: "(Career education) may be used as a weapon of oppression against the community of non-whites in this country, trapping them into an occupational fiefdom of servitude to a privileged professional class" (Marland, 1973: 114).

While it may well be that the absolute opposite is intended by those who advance the theory, the poor track record of our system in elevating minority people to a position of equality in employment is well known. Unemployment for blacks is commonly twice as high as for whites. Such evidence, reinforced on a daily basis, is enough in itself to underpin any reluctance of black educators and influentials to support vocational education today.

As an indicator of the latent negative values held by the black community for vocational education, the proportion non-white public school enrollment is used. It is acknowledged that the above

interpretation of the percent black index may be seriously challenged. For example, a high proportion black is a strong indication that the district is a poor one. A high percentage of black enrollment is also likely to be positively correlated with the proportion of disadvantaged youth in a district. Therefore, the hypothesized negative effect of black enrollment, and the hoped-for positive effect of a high proportion of disadvantaged youth upon the location of AVTC run counter to one another.

In partial answer to the question of validity, the following multivariate analysis attempts to control for alternative interpretations of the percent black indicator, specifically, wealth of district and percent disadvantaged youth.

It will also be observed that in other studies the proportion non-white correlates highly with indexes of social rigidity and economic stagnation or, conversely, openness of social structure (Nicholls, 1960; Young and Moreno, 1965). If this interpretation were to be employed, the same empirical results would be expected, but they would be attributed to continued discrimination against the black community rather than to rejection by the black community of a palliative (AVTC) in lieu of compensatory capital investment in general education. This empirical analysis will not settle the debate as to which of these two interpretations is more viable. It may be that both influences are at work and, therefore, reinforcing one another. However, given the history of unwillingness to accept vocational education as a substitute for a liberal general education, it is the authors' judgment that values held by black educators and influentials are largely responsible for the low probabilities of AVTC locations in predominantly black counties. If educators in predominantly black counties had placed a high value on vocational education during the early 1970s and had worked as diligently as other counties toward establishing AVTC, it is hard to believe that their efforts would have gone unrewarded. Of course, further research could settle this debate.

Results: Zero-order correlations

As expected, there are moderate to strong product-moment correlations (r) among the independent variables as well as between the independent variables and location of AVTC. Both of the state level administrative criteria, school enrollment and proportion disadvantaged, are highly correlated with their counterpart indicators of local structure and values. Specifically, school enrollment (Log_n) and large employers (Log_n) have an r of .93 and percent disadvantaged and percent non-white enrollment have an r of .85 (Table 1). However, the disadvantaged indicator is more negatively correlated with the size variables, -.54 and -.39, than is the percent non-white indicator of values, -.33 and -.22. It is no surprise that the disadvantaged variable is more negatively correlated with the size variables than is the non-white variable, given the much higher migration rate of blacks from depressed rural areas.

Table 1: Means, Standard Deviations and Correlation Coefficients

Parameters and Variables	1.	2.	3.	4.	5.	6.	1970	1974	1975	1976	1978
Mean	8.94	45.52	3.77	37.60	3.0	6.9	.40	.51	.58	.60	.69
Standard Deviation	0.81	27.46	1.13	27.53	15.5	8.9	.49	.50	.50	.49	.47
1. School Enrollment 1 - 12, 1972 (Ln)[1]		-.54	.93	-.33	.46	.38	.65	.59	.50	.51	.38
2. Percent Disadvantaged Youth, 10 - 17[2]			-.39	.85	-.61	-.34	-.44	-.47	-.55	-.56	-.34
3. Establishments 20 + Employees (Ln)[3]				-.22	.36	.27	.57	.52	.42	.41	.27
4. Percent School Enrollment Non-White[1]					-.57	-.29	-.37	-.50	-.55	-.56	-.29
5. Population Growth Rate[4] 1960 - 19[illegible]						.23	.45	.45	.41	.43	.23
6. Population Growth Rate[4] 1970 - 1976							.13	.24	.25	.30	.14

[1]Alabama Department of Education. 1975. Annual Report. State Office Building, Montgomery

[2]Alabama Department of Education. 1977. Alabama State Plan for Vocational Education, Montgomery (Based on 1970 Census)

[3]U. S. Bureau of the Census. 1974. County Business Patterns for 1972 for Alabama counties.

[4]Center for Business and Economic Research. 1977. Economic Abstract of Alabama. The University of Alabama, University, Alabama.

[5]An Area Vocational Training Center exists to serve the county school system = 1; if not present = 0

With respect to location of AVTC, the school enrollment correlation declines from a high of .65 in 1970 to .38 in 1978. This decline suggests that the percent disadvantaged may be exerting its influence in the allocative process. However, the zero-order correlation suggest the opposite until 1978. The negative r of percent disadvantaged with AVTC increased from a -.44 in 1970 to -.56 in 1976. Only in 1978 did the negative correlation decline to -.34.

Similar to enrollment, the employer-complexity variable exhibits a declining correlation from .57 to .27 over the 8-year period while the negative influence of percent non-white is increasing from -.39 to a -.56 correlation before declining to a -.29 in 1978. The population growth trend (1960-1970) maintains a study correlation between .41 and .45 with AVTC location until 1978 when the correlation drops to .23. Estimates of recent growth (1970-1976) show weaker correlation with AVTC location.

In general it may be observed that since 1970 there has been a tendency to locate AVTC in smaller communities with increasingly smaller enrollments.

Observation of the zero-order relationships is consistent with the prior expectations of the influence of these variables upon AVTC location. But, the correlation do not answer the question as to whether the complex of community values, indexed by the predominance of the Black community, alter the pattern of locating AVTCs in the larger systems first. The negative correlation between enrollment size (SEL_n) and %NW may simply mean that the larger systems which have proportionately fewer blacks are establishing the systems first and the smaller rural systems with proportionately more blacks are waiting their turn. If this hypothesis is supported, the following multivariate analysis will show a strong positive regression coefficient for the enrollment variable and a non-significant coefficient for the %NW variable.

However, the previous discussion suggests that both a positive effect for SEL_n and a negative effect for %NW will prevail.

The second question regards the consideration for the proportion of the youth which are disadvantaged in the process of locating AVTC. In theory this variable (%YD) should be the second consideration, next to total enrollment in allocating AVTCs. The negative correlation in Table 1 suggest little regard is given to the disadvantaged.

Again, the picture appears to be complicated by the lack of a strong interest in vocational education in the disadvantages rural black communities which have few local employment opportunities anyway.

A multiple regression equation which controls for both the size of enrollment and the proportion of the enrollment which is black may well yield a positive effect for the proportion disadvantage variable.

Regression model predicting AVTC locations: Disadvantaged rates versus local value system

While classical least-squares is the procedure most commonly applied to analysis of a dichotomous dependent variable (Orcutt et al, 1961; Wheelock, 1974) there are certain weaknesses in this approach. Specifically, the classic assumption of homoscedasticity is untenable, and the predicted probability of the occurrence of an AVTC may fall outside the interval between 0 and 1, and, therefore, is inconsistent with the probability interpretation (Goldberger, 1964: 249-250).

Substantively, however, in comparison with more sophisticated, but less readily available estimating procedures, ordinary least-squares procedures have proven generally reliable (Johnson, 1972: 183). With respect to log-linear models, Knoke (1975: 416) has observed that their results converge with those of regression models when the proportion of the dependent dichotomy is between .25 and .75. In this case, the proportions range from .40 in 1970 to .69 in 1978.

Therefore, the ordinary linear regression procedure is used to obtain classical least-squares estimators of the conditional probability of the location of AVTC, the dependent variable (Goldberger, 1964: 249).

The linear regression model used is as follows:

$$1.0 \quad AVTC_i = B_0 + B_1 SEL_n + B_2 \%NW + B_3 \%YD + E$$

When $AVTC_i$ = 1 if AVTC is present in county or
0 if AVTC is not present for i = 1970, 1974, 1975, 1976 and 1978,

B_0 = the intercept,

$B_1 - B_3$ = the unstandardized partial regression coefficients for $X_1 - X_3$ respectively,

SEL_n = log of the total public school enrollment (1-12) in the county - 1974

%NW = % of total public school enrollment (1-12) which is non-white,

%YD = % of youth population which is disadvantaged (age 10-17), and

E = error of estimate.

The regression analysis presented here includes the results of data fit to the above model for each of five periods.

The community values versus size of school enrollment hypothesis is tested using the first two independent variables (SEL_n and %NW) while the hypothesis of a positive effect for proportion of youth which are disadvantaged (%YD) is tested using all three independent variables.

Table 2: Replications of a Test for the Community Values Hypothesis by Multiple Regression (67 Alabama Counties)

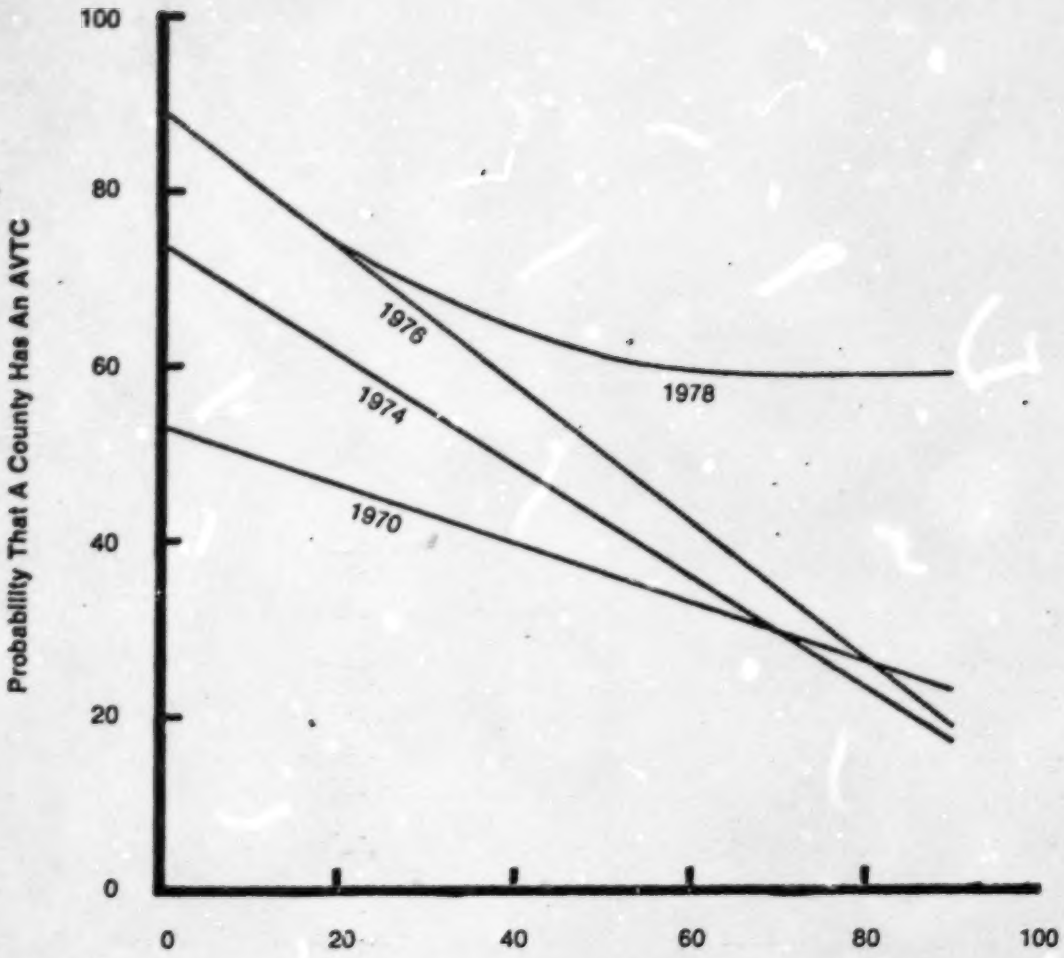
	SELn	ZNW	ZNW^2	$\bar{R}^2$
$AVTC_{70}$ = .563	+.060	-.0032		.43
	(5.97)	(-1.81)		
$AVTC_{74}$ = -1.876	+.293	-.0063		.43
	(4.80)	(-3.49)		
$AVTC_{75}$ = -1.094	+.221	-.0079		.40
	(3.58)	(-4.33)		
$AVTC_{76}$ = -1.099	+.223	-.0079		.42
	(3.69)	(-4.45)		
$AVTC_{78}$ = -.828	+.191	-.0078	+.000052	.14
	(2.71)	(-1.19)	(0.78)	

Table 3: Replications of a Test for the Proportion Youth Disadvantaged as a Criteria for AVTC Location by Multiple Regression.*

	SELn	ZNW	ZYD	$\bar{R}^2$
$AVTC_{70}$ = -2.906	+.380	-.0048	+.0022	.43
	(5.40)	(-1.47)	(.59)	
$AVTC_{74}$ = -2.526	+.354	-.011	+.0062	.45
	(5.03)	(-3.32)	(1.68)	
$AVTC_{75}$ = -1.173	+.228	-.0084	+.00075	.40
	(3.15)	(-2.49)	(.198)	
$AVTC_{76}$ = -1.156	+.229	-.0083	+.00054	.41
	(3.21)	(-2.51)	(.144)	
$AVTC_{78}$ = -.877	+.187	-.0036	+.00084	.13
	(2.32)	(-.95)	(.199)	

*t-values for the unstandardized regression coefficients are enclosed ( ).

FIGURE 1 LOCATION OF COUNTY-WIDE AVTCs (1970 - 1978) IN 67 ALABAMA COUNTIES



[1]The partial regression slopes presented above, AVTC dummy variables regressed on % non-white school enrollment, represent the predicted probabilities that 67 Alabama counties with non-white enrollments ranging from less than 1.0 to more than 90.0 percent have an AVTC in 1970, 1974, 1976 and 1978. The intercepts are adjusted for significant effects and mean values of enrollment (SELn). See the full equations in Table 2.

In Table 2, it is clear that school enrollment is the strongest predictor variable throughout the period. Local values in the form of the percent non-white school enrollment exert a strong influence on AVTC location in 1970 and increasingly strong influences in 1974, 1975 and 1976. As observed in Table 1 the effect declines here as well. Increasing effects of this variable may be made more graphic by plotting the partial regression coefficients for AVTC regressed on non-white enrollment.

The regression slopes in Figure 1, adjusted for the mean value of the control variable, represent, with respect to their non-white school enrollment ratio, the predicted probabilities of an AVTC being located in Alabama counties. This slope adjusted for the other variables accounts for more than 40 percent of the variance in AVTC location for each of the first four periods. In 1978, the new AVTC facilities in the six predominately black Tennessee-Tombigbee Waterway counties cause a considerable adjustment in the regression fit. This represents an unprecedented emphases on potential economic development of an area, as opposed to elaboration of continuing development patterns in the location of AVTCs.

The second hypothesis that AVTCs are located with respect to the proportion of youth who are disadvantaged is weakly supported only after controlling for the proportion of enrollment which is black (Table 3). The coefficients for the disadvantaged youth ratio are positive for all years. Among smaller white communities, those with lower incomes and more disadvantaged youth are establishing AVTC's before small but slightly wealthier communities. Presumably the same positive effect hold for %YD among the smaller racially mixed and predominately black communities but the location of an AVTC is much less frequent. Finally, it should be noted that the addition of controls for population change and county business patterns do not alter the signs of the coefficients in these equations.

Discussion

Much more intimate familiarity with the policy-making process is required to understand the cause of the trends observed here, but policy-makers, both state and federal, as well as the local public, should consider the meaning of these data. Successful implementation of AVTC in rural school systems in an environment nearly void of the influences of a modern industrial community and labor force will be more difficult than usual.

Rural industrialization, particularly labor intensive manufacturing, may be selectively locating in communities with concentration of low income labor thus reinforcing the policy criteria favoring communities with high proportion of disadvantaged. If so there is a potential match of interest between the school leaders and new rural industry.

Indeed this is already happening. The sharp increase in the number of AVTC in the predominately black counties is almost exclusively due to six new AVTC's in contiguous counties along the Tennessee-Tombigbee Waterway. A major company in the dominant timber industry

of the area has made the initial contributions needed to attract sufficient state and federal money to build the schools. While industry apparently recognizes the dramatic transition which the local labor force is about to experience, e.g., automation of the timber industry, local values may still be lagging.

Rural oriented vocational educators will have to retool more rapidly. The vocational education planning process will have to incorporate many more representatives of industry and business if it is to equip local youth and adults with work habits and skills necessary to get the quality jobs they aspire too. More community organizational skills will have to be developed in order that quality industries will be attracted to the area. In short, the process must be an integrated effort to create desirable jobs, train manpower for the jobs and place the people trained. (Pelham, 1974).

Rural communities with growth potential as proposed by Jonathan Sher (1977) may be well advised to encourage their schools to take the lead in the form of a school organized-community development corporation. Job creation, job training and job placement could thus be an integrated activity. A final look at Figure 1 makes it amply clear that their are no directly applicable precedents for the predominately black rural communities to follow. They have their AVTCs but little else in common with the larger more industrialized and urbanized communities. In the urban communities perhaps education can afford to play a highly specialized role. There are other sectors to take up the slack. In a potentially emerging rural area it seems only logical that education must be the leading sector in the development process. If the local school board, advisory councils and educators fail to assume leadership, who else is there?

Counter to the prevailing trend of locating AVTCs in places where the nest was ready made, AVTCs in these rural Southeast Alabama towns are faced with the task of either developing a nest for themselves or floundering and failing to provide a worthwhile service to their communities. They are much more conspicious in their remote rural settings than are AVTCs in the rest of the state. Their failures or successes will be more visible than elsewhere. The stakes appear to be high. On the other hand, it is hard to conceive of the AVTCs succeeding without the larger community succeeding too. Failure of AVTCs to these communities would only be an extension of the 1960s. Thus a joint school-community development cooperation would appear to be a logical strategy.

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